

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. APPLN. NO. 10/051,070
ATTORNEY DOCKET NO. Q68238

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (*Currently Amended*) A rolling bearing for a hard disk drive comprising:
 - an inner ring;
 - an outer ring;
 - a plural number of rolling elements located between said inner ring and said outer ring;
 - a cage supporting said plural number of rolling elements;
 - a pair of sealing members fixed to both ends in an axial direction of one of said inner ring and said outer ring and disposed opposite to each other; and
 - a sole lubricant consisting of an amount of lubricating oil directly injected into a to-be-sealed bearing space defined between said sealing members at the both ends in the axial direction, wherein the amount of injected lubricating oil is in a range of 1 to 50% by volume of the to-be-sealed bearing space, and wherein the amount of injected lubricating oil excludes any lubricating oil preliminarily impregnated in the cage.
2. (*Previously Presented*) The rolling bearing for a hard disk drive according to claim 1, in which the amount of said lubricating oil is not more than 30% by volume of the to-be-sealed bearing space.

3. *(Previously Presented)* The rolling bearing for a hard disk drive according to claim 1, in which the amount of said lubricating oil is in a range of 4-25% by volume of the to-be-sealed bearing space.

4. *(Cancelled)*.

5. *(Previously Presented)* The rolling bearing for a hard disk drive according to claim 1, in which an amount of said lubricating oil preliminarily impregnated in said cage is in a range of 0.1-80% by weight of said cage.

6. *(Previously Presented)* The rolling bearing for a hard disk drive according to claim 5, in which the amount of said lubricating oil preliminarily impregnated in said cage is in a range of 10-70% by weight of said cage.

7. *(Cancelled)*.

8. *(Previously Presented)* The rolling bearing for a hard disk drive according to claim 1, wherein said lubricating oil is injected into the to-be-sealed bearing space of the rolling bearing while said lubricant oil is prevented from adhering to an external portion of the rolling bearing.

9. (*Currently Amended*) A rolling bearing for a hard disk drive comprising:

- an inner ring;
- an outer ring;
- a plural number of rolling elements located between said inner ring and said outer ring;
- a cage supporting said plural number of rolling elements;
- a pair of sealing members fixed to both ends in an axial direction of one of said inner ring and said outer ring and disposed opposite to each other; and
- a sole lubricant comprising an amount of lubricating oil directly injected into a to-be-sealed bearing space defined between said sealing members at the both ends in the axial direction, wherein the amount of injected lubricating oil is in a range of 1 to 50% by volume of the to-be-sealed bearing space[[,]] and wherein the amount of injected lubricating oil excludes any lubricating oil preliminarily impregnated in the cage, and wherein the kinematic viscosity of the sole lubricant is not more than 400mm²/s.

10. (*Currently Amended*) A hard disk drive comprising:

- an actuator; and
- a rolling bearing for said actuator, comprising:
 - an inner ring;
 - an outer ring;
 - a plural number of rolling elements located between said inner ring and said outer ring;
 - a cage supporting said plural number of rolling elements;
 - a pair of sealing members fixed to both ends in an axial direction of one of said inner ring and said outer ring and disposed opposite to each other; and
 - a sole lubricant consisting of an amount of lubricating oil directly injected into a to-be-sealed bearing space defined between said sealing members at the both ends in the axial direction, wherein the amount of injected lubricating oil is in a range of 1 to 50% by volume of the to-be-sealed bearing space, and wherein the amount of injected lubricating oil excludes any lubricating oil preliminarily impregnated in the cage.

11. (*Previously Presented*) The hard disk drive according to claim 10, in which the amount of said lubricating oil is not more than 30% by volume of the bearing space.

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12. (*Previously Presented*) The hard disk drive according to claim 10, in which the amount of said lubricating oil is in a range of 4-25% by volume of the bearing space.

13. (*Cancelled*).

14. (*Previously Presented*) The hard disk drive according to claim 10, in which an amount of said lubricating oil preliminarily impregnated in said cage is in a range of 0.1-80% by weight of said cage.

15. (*Previously Presented*) The hard disk drive according to claim 14, in which the amount of said lubricating oil preliminarily impregnated in said cage is in a range of 10-70% by weight of said cage.

16. (*Previously Presented*) The hard disk drive according to claim 15, in which the amount of said lubricating oil preliminarily impregnated in said cage is not more than 40% by weight of said cage.

17. (*Previously Presented*) The hard disk drive according to claim 10, wherein said lubricating oil is injected into the to-be-sealed bearing space of the rolling bearing while said lubricating oil is prevented from adhering to an external portion of the rolling bearing.

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18. (*Currently Amended*) A rolling bearing for a hard disk drive comprising:

- an inner ring;
- an outer ring;
- a plural number of rolling elements located between said inner ring and said outer ring;
- a cage supporting said plural number of rolling elements;
- a pair of sealing members fixed to both ends in an axial direction of one of said inner ring and said outer ring and disposed opposite to each other; and
- an amount of lubricating oil contained in a sealed bearing space defined between said sealing members at the both ends in the axial direction, wherein the amount of lubricating oil is in a range of 1 to 50% by volume of the bearing space, and wherein the amount of lubricating oil excludes any lubricating oil preliminarily impregnated in the cage.

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19. (*Currently Amended*) A rolling bearing for a hard disk drive comprising:

- an inner ring;
- an outer ring;
- a plural number of rolling elements located between said inner ring and said outer ring;
- a cage supporting said plural number of rolling elements;
- a pair of sealing members fixed to both ends in an axial direction of one of said inner ring and said outer ring and disposed opposite to each other; and
- an amount of lubricating oil contained in a sealed bearing space defined between said sealing members at the both ends in the axial direction, wherein the amount of lubricating oil is in a range of 1 to 50% by volume of the bearing space[[,]] and wherein the amount of lubricating oil excludes any lubricating oil preliminarily impregnated in the cage, and wherein the kinematic viscosity of the lubricating oil is not more than $400\text{mm}^2/\text{s}$.

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20. (*Currently Amended*) A hard disk drive comprising:

an actuator; and

a rolling bearing for said actuator, comprising:

an inner ring;

an outer ring;

a plural number of rolling elements located between said inner ring and said outer ring;

a cage supporting said plural number of rolling elements;

a pair of sealing members fixed to both ends in an axial direction of one of said inner ring and said outer ring and disposed opposite to each other; and

an amount of lubricating oil confined to a sealed bearing space defined between said sealing members at the both ends in the axial direction, wherein the amount of lubricating oil is in a range of 1 to 50% by volume of the bearing space, and wherein the amount of lubricating oil excludes any lubricating oil preliminarily impregnated in the cage.

21. (*Cancelled*).

22. (*Currently Amended*) A rolling bearing for a hard disk drive comprising:

- an inner ring;
- an outer ring;
- a plural number of rolling elements located between said inner ring and said outer ring;
- a resin cage supporting said plural number of rolling elements;
- a pair of sealing members fixed to both ends in an axial direction of one of said inner ring and said outer ring and disposed opposite to each other; and
- a sole lubricant consisting of an amount of lubricating oil directly injected into a to-be-sealed bearing space defined between said sealing members at the both ends in the axial direction, wherein the amount of injected lubricating oil is in a range of 1 to 50% by volume of the to-be-sealed bearing space, ~~and wherein the amount~~ of injected lubricating oil excludes any lubricating oil preliminarily impregnated in the cage.

23. (*Currently Amended*) A rolling bearing for a hard disk drive comprising:

- an inner ring;
- an outer ring;
- a plural number of rolling elements located between said inner ring and said outer ring;
- a resin cage supporting said plural number of rolling elements;
- a pair of sealing members fixed to both ends in an axial direction of one of said inner ring and said outer ring and disposed opposite to each other; and
- a sole lubricant comprising an amount of lubricating oil directly injected into a to-be-sealed bearing space defined between said sealing members at the both ends in the axial direction, wherein the amount of injected lubricating oil is in a range of 1 to 50% by volume of the to-be-sealed bearing space[[,]] and wherein the amount of injected lubricating oil excludes any lubricating oil preliminarily impregnated in the cage, and wherein the lubricating oil is comprised of base oils and ester oils, wherein the ester oils are at least 20% by weight of the base oils.

24. (*Currently Amended*) A hard disk drive comprising:

- an actuator; and
- a rolling bearing for said actuator, comprising:
 - an inner ring;
 - an outer ring;
 - a plural number of rolling elements located between said inner ring and said outer ring;
 - a resin cage supporting said plural number of rolling elements;
 - a pair of sealing members fixed to both ends in an axial direction of one of said inner ring and said outer ring and disposed opposite to each other; and
 - a sole lubricant consisting of an amount of lubricating oil directly injected into a to-be-sealed bearing space defined between said sealing members at the both ends in the axial direction, wherein the amount of injected lubricating oil is in a range of 1 to 50% by volume of the to-be-sealed bearing space, and wherein the amount of injected lubricating oil excludes any lubricating oil preliminarily impregnated in the cage.

25. (*Currently Amended*) A hard disk drive comprising:

- an actuator; and
- a rolling bearing for said actuator, comprising:
 - an inner ring;
 - an outer ring;
 - a plural number of rolling elements located between said inner ring and said outer ring;
 - a resin cage supporting said plural number of rolling elements;
 - a pair of sealing members fixed to both ends in an axial direction of one of said inner ring and said outer ring and disposed opposite to each other; and
 - a sole lubricant comprising an amount of lubricating oil directly injected into a to-be-sealed bearing space defined between said sealing members at the both ends in the axial direction, wherein the amount of injected lubricating oil is in a range of 1 to 50% by volume of the to-be-sealed bearing space[[,]] and wherein the amount of injected lubricating oil excludes any lubricating oil preliminarily impregnated in the cage, and wherein the lubricating oil is comprised of base oils and ester oils, wherein the ester oils are at least 20% by weight of the base oils.